CLAIMS

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What is claimed is:

- 1. A metabolite produced by *Streptomyces* sp. strain NRRL No. B-30145 and mutants thereof having all the identifying characteristics of NRRL No. B-30145 and that exhibits activity against plant pathogenic fungi.
- 2. The metabolite of claim 1, wherein the metabolite has a molecular weight [M+ H⁺] between about 925 to about 865.
- 3. The metabolite of claim 2, wherein the molecular weight is selected from the group consisting of 866.5, 882.5, 898.4, 892.5, 908.5 and 924.5.
- 4. The metabolite of claim 1, wherein the metabolite is heat and base stable, is acid labile and has a molecular weight [M+ H⁺] between about 925 to about 865.
- 5. The metabolite of claim 4, wherein the molecular weight is selected from the group consisting of 866.5, 882.5, 898.4, 892.5, 908.5 and 924.5.
- 6. The metabolite of claim 1, wherein the metabolite has a chromatogram at 220 nm shown in Figure 3.
- 7. The metabolite of claim 1, wherein the metabolite exhibits UV absorption between about 215 nm and 220 nm.
- 8. The metabolite of claim 1, wherein the metabolite has a ¹H Nuclear Magnetic Resonance spectra shown in Figure 4.
- 9. The metabolite of claim 1, wherein the metabolite has a ¹³C Nuclear Magnetic Resonance spectra shown in Figure 5.
- 10. The metabolite of claim 1, wherein the metabolite comprises one or more molecules selected from the group consisting of propargyl alcohol segments [C=C-CH(OH)], oxygenated methine carbons (X-CH-Y) or a sugar moiety.
- 11. The metabolite of claim 10, wherein the metabolite comprises at least two propargyl alcohol segments [C=C-CH(OH)].
 - 12. A composition comprising the metabolite of claim 1 and a carrier.
- 13. A composition comprising more than one metabolite of claim 1 and a carrier.

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- 15. The composition of claim 13, further comprising at least one chemical or biological pesticide.
- 16. The composition of claim 12, wherein the composition is formulated from the group consisting of a wettable powder, a granule, an aqueous suspension, and emulsifiable concentrate and a microencapsulated formulation.
- 17. The composition of claim 13, wherein the composition is formulated from the group consisting of a wettable powder, a granule, an aqueous suspension, and emulsifiable concentrate and a microencapsulated formulation.
- 18. A method for protecting or treating plants, fruit, and roots from fungal infections comprising applying an effective amount of the metabolite of claim 1 to the plant, fruit or root.
- 19. The method of claim 18, wherein the infections are caused by a fungus selected from the group consisting of Alternaria solani, Botrytis cinerea, Rhizoctonia sp., Sclerotinia sp., and Phytophthora sp.
- 20. The method of claim 18, wherein more than one metabolite of Streptomyces sp. NRRL No. B-30145 strain that exhibits activity against plant pathogenic fungi is applied.
- 21. The method of claim 18, wherein the metabolite has a molecular weight [M+H⁺] between about 925 to about 865.
- 22. The method of claim 21, the molecular weight of the metabolite is selected from the group consisting of 866.5, 882.5, 898.4, 892.5, 908.5 and 924.5.
- 23. The method of claim 18, wherein the metabolite is heat and base stable, is acid labile and has a molecular weight [M+H⁺] between about 925 to about 865.
- 24. The method of claim 23, wherein the molecular weight is selected from the group consisting of 866.5, 882.5, 898.4, 892.5, 908.5 and 924.5.
- 25. The method of claim 18, wherein the metabolite has a chromatogram at 220 nm shown in Figure 3.
- 26. The method of claim 18, wherein the metabolite exhibits UV absorption between about 215 nm and 220 nm.

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- 27. The method of claim 18, wherein the metabolite has a ¹H Nuclear Magnetic Resonance spectra shown in Figure 4.
- 28. The metabolite of claim 18, wherein the metabolite has a ¹³C Nuclear Magnetic Resonance spectra shown in Figure 5.
- 29. The method of claim 18, wherein the metabolite is applied as a formulation selected from the group consisting of wettable powders, granules, aqueous suspensions, emulsifiable concentrates or microencapsulations.
- 30. The method of claim 29, further comprising applying an effective amount of at least one chemical or biological pesticide.
- 31. The method of claim 29, wherein the formulation comprises more than metabolite.
- 32. An antifungal composition comprising a metabolite produced by Streptomyces and isolated according to a method comprising:
- (a) loading a whole broth culture of *Streptomyces sp. strain* NRRL No. B-30145 or mutants thereof having all the identifying characteristics of NRRL No. B-30145 onto a non-ionic absorbent polymeric resin;
 - (b) eluting the metabolite with an alcohol;
- (c) screening the eluent of step (b) with a bioassay for fractions of the eluent exhibiting antifungal activity;
- (d) loading the fractions of the eluent exhibiting antifungal activity of step (c) on a HPLC column; and
 - (e) eluting the metabolite with an organic solvent.
- 33. The composition of claim 32, wherein the eluent of step (b) is methanol or a gradient of aqueous methanol.
- 34. The composition of claim 32, wherein the bioassy of step (c) is selected from the group consisting of the agar diffusion assay or slide germination assay.
- 35. The composition of claim 32, wherein the organic solvent of step(e) is an acetonitrile -water gradient.
- 36. A method for protecting or treating plants, fruit, and roots from fungal infections comprising applying an effective amount of the composition of claim 32 to the plant, fruit or root.

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- 37. The method of claim 32, wherein the infections are caused by a fungus selected from the group consisting of Alternaria solani, Botrytis cinerea, Rhizoctonia sp., Sclerotinia sp., and Phytophthora sp.
- 38. The method of claim 32, wherein the *Streptomyces sp.* strain NRRL No. B-30145 is applied as a formulation selected from the group consisting of wettable powders, granules, aqueous suspensions, emulsifiable concentrates or microencapsulations.
- 39. The method of claim 32, further comprising applying an effective amount of at least one chemical or biological pesticide.

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